

## ABSTRACT OF THE DISCLOSURE

A noise suppression circuit for a communications channel (12) comprises a noise reference extraction device (14), for example a hybrid transformer or circuit, for  
5 extracting from an input signal (S) a reference signal ( $N_{CM}$ ) corresponding to a noise component in the input signal and supplying the noise reference signal to a noise estimation unit (16) which derives therefrom a noise estimate ( $Y_j$ ) which is subtracted from the input signal to produce a noise-suppressed output signal ( $D_{OUT}$ ). The noise suppression circuit comprises a first analog-to-digital converter (24) for digitizing the  
10 input signal at a first sampling rate ( $F_s$ ) and a second analog-to-digital converter for sampling the noise reference signal ( $N_{CM}$ ) at a second, lower sampling rate ( $F_s/M$ ), the ratio ( $M$ ) between the two sampling rates being an integer. A decimator (40) decimates the input signal to produce a decimated signal ( $D_j + N_j$ ). An adaptive filter (34) produces a noise estimate signal ( $Y'_j$ ) that is subtracted from the decimated signal to produce an  
15 error signal ( $\epsilon_j$ ) which is used by adaptive filter (34) to adjust its coefficients. An interpolator (36) interpolates the interim noise estimate signal ( $Y'_j$ ) by the same integer ( $M$ ) to provide a noise estimate signal ( $Y_j$ ) which is subtracted from a digitized and delayed version of the input signal to produce the noise-suppressed output signal ( $D_{OUT}$ ).

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